

Variations on a Human Face

Name: _____ Date: _____

Table: _____ Section: _____

Materials: 2 pennies, chart on human traits

First determine which partner will toss for the male and which will toss for the female. Each of you will get a penny.

Using the table, decide on the traits each of your parents will have. Remember to include the top part of the chart so that you can keep track of which table goes to which face.

Once you have finished filling out the table, draw your faces for your parents. Be sure to include details for each trait in the face.

Now you will cross your parents faces 2 times to create offspring. For all coin tosses, heads will represent the dominant allele and tails will represent the recessive allele. For each trait on the chart you will flip a coin to determine what GENOTYPE your offspring will have. Put a check in the box that represents your offspring.

Example: For Shape of Face – Your partner tossed heads, and you tossed tails. That means your offspring's genotype is Rr, and the child will have a round face. You would check that box. If you had instead both tossed tails, the child would have a square-shaped face (rr). If you'd both tossed heads, the child would have a round shaped (RR) face. Coins should be flipped only once for each trait.

Polygenic Traits

Some traits are controlled by more than two genes and are called polygenic. Hair, eye color and skin color are examples of polygenic traits.

Hair Color

Dark hair is dominant over light. To determine the color of the offspring's hair, assume there are two gene pairs involved (there are actually more than that, but for the purpose of this activity, let's not go crazy). Flip your coin first to determine the genotype of the first pair of alleles (AA, Aa, or aa).

Now, flip the coins again to determine the genotype of the second pair of alleles (BB, Bb, or bb). Match the genotype you have to the hair color on the chart. Circle your offspring's hair color.

If the genotype is....	The hair color is...
AABB	black
AABb	black
AAbb	red
AaBB	brown
Aabb	regular blonde
AaBb	brown
aaBB	dark blonde
aaBb	regular blonde
aabb	pale yellow blonde

Eye Color

Dark eyes are dominant over light. To determine the color of the offspring's eyes, assume there are two gene pairs involved, one which codes for depositing pigment in the front of the iris, and one which codes for depositing pigment in the back of the iris.

Determine the genotype of the first pair (AA, Aa, or aa) Then flip again to determine the genotype of the second pair (BB, Bb, or bb). Use the chart below to find out what eye color your offspring has and circle it.











































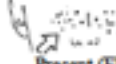
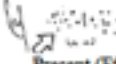
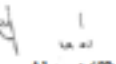






If the genotype is....	The eye color is....
AABB	dark brown
AABb	dark brown
AAbb	brown
AaBB	brown with green flecks
AaBb	brown
Aabb	gray-blue
aaBB	green
aaBb	dark blue
aabb	light blue (hazel)

Analysis and Conclude

1. Was your child exactly like any other child in the room? Give examples to show evidence.
2. What do you think the probability was that two children in the room would turn out exactly alike?

3. How might it be possible for you to show a trait that neither of your parents have?

4. How do human traits differ from the pea plants that Mendel worked with?

Human Variations				Trait	Dominant (both heads)	Hybrid (one head, one tail)	Recessive (both tails)
Trait	Dominant (both heads)	Hybrid (one head, one tail)	Recessive (both tails)	Length of Eyelashes	 Long (LL)	 Long (Ll)	 Short (ll)
Shape of Face	 Round (RR)	 Round (Rr)	 Square (rr)	Shape of Eyebrows	 Bushy (BB)	 Bushy (Bb)	 Thin (bb)
Cleft in Chin	 Absent (CC)	 Absent (Cc)	 Present (cc)	Position of Eyebrows	 Not connected (NN)	 Not connected (Nn)	 Connected (nn)
Hair	 Curly (HH)	 Wavy (Hh)	 Straight (hh)	Size of Nose	 Large (NN)	 Medium (Nn)	 Small (nn)
Widow's Peak	 Present (WW)	 Present (Ww)	 Absent (ww)	Shape of Lips	 Thick (TT)	 Medium (Tt)	 Thin (tt)
Spacing of Eyes	 Close (EE)	 Normal (Ee)	 Far (ee)	Size of Mouth	 Large (LL)	 Medium (Ll)	 Small (ll)
Shape of Eyes	 Almond (AA)	 Almond (Aa)	 Round (aa)	Size of Ears	 Large (LL)	 Medium (Ll)	 Small (ll)
Position of Eyes	 Straight (SS)	 Straight (Ss)	 Slant (ss)	Freckles	 Present (FF)	 Present (Ff)	 Absent (ff)
Size of eyes	 Large (LL)	 Medium (Ll)	 Small (ll)	Dimples	 Present (DD)	 Present (Dd)	 Absent (dd)

Please circle which face the chart represents. Don't forget to name the face!

■ Parent: Mother Father Name: _____

■ Offspring: 1 2 3 4 Name: _____

Trait	Genotype	Phenotype
Gender		
Eye Color		
Hair Color		
Shape of Face		
Cleft in chin		
Hair		
Widow's Peak		
Spacing of Eyes		
Shape of Eyes		
Position of Eyes		
Size of Eyes		
Length of Eyelashes		
Shape of Eyebrows		
Position of Eyebrows		
Size of Nose		
Shape of Lips		
Size of Mouth		
Size of Ears		
Freckles		
Dimples		

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Shape of Eyes		
Position of Eyes		
Size of Eyes		
Length of Eyelashes		
Shape of Eyebrows		
Position of Eyebrows		
Size of Nose		
Shape of Lips		
Size of Mouth		
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Shape of Eyebrows		
Position of Eyebrows		
Size of Nose		
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